"Pathologic recurrent fractures on bone cysts in children: a new minimally invasive approach"

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patient was taught to lengthen the nail 1mm per day with the external control unit (ECU)of the Precice nail. the lengthening of the nail was completed on the postoperative 56th day. After that a unilateral external fixator was applied with one Schanz screw to each proximal and distal site of the tibia and the distal interlocking nails of the Precice nail was extracted under anesthesia. the first part of the procedure completed and the patient was taken in in to her room. After that the ECU was programmed to shorten to its initial length. After two days when the nail shortening was completed the distal interlocking screws placed and the unitlateral external fixator was extracted under anesthesia. The second lengthening period was completed in 50 days. A total lengthening of 100mm was obtained. The patient is now in the consolidation phase. There is no limitation of the knee range of motion. The decision will be made about the 5 cm residual discrepancy after the consolidation will be completed.

Conclusions: This case showed that the Precise nail mechanism allow shortening after the lengthening is completed and a second lengthening can be performed with the same nail safely. This is the first case in the literature involving limb lengthening with one nail more than its capacity.

12.07 Pathologic recurrent fractures on bone cysts in children: a new minimally invasive approach

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Objectives: Bone cysts are one of the main pathologic fractures providers in children.
Several minimally invasive treatments have shown equivalent cyst recurrence rates to the invasive techniques. This study challenges a new minimally invasive approach applicable to both simple and aneurysmal bone cysts: Demineralized Bone Matrix (DBM) mixed with autologous bone-marrow.

Material and Methods: The first group, treated in the Cliniques Universitaires Saint-Luc, has been analysed on a prospective basis. Starting September 2008, 8 Aneurysmal Bone Cysts (ABC) and 16 Unicameral Bone Cysts (UBC) received the new percutaneous treatment. The second group, studied on a retrospective basis, comes from the Hôpital Universitaire Necke. ABC were injected with absolute alcohol and UBC with Methylprednisolone Acetate. A third group operated in Paris underwent resection or a combination of both minimally invasive and open approaches. 121 children were selected to compare the injections: 24 from Brussels and 97 from Paris. 58 were identified for inclusion in the open surgical comparison.

Results: Of the 7 ABC, 6 (86%) healed after the first injection versus a 10/61 (16%) ratio reached in Paris ($p<0.001$). Among UBC, equivalent healing rates (25%) followed the first injection in both hospitals. With the second injection, 7 UBC out of 12 (58%) healed with DBM and marrow compared to 4 out of 21 (19%) in Paris ($p<0.02$). The patients who underwent one resection as their only treatment healed in 17/38 (45%) of the ABC ($p<0.05$ with group one) and in 14/20 (70%) of the UBC (NS).

Discussion: DBM and marrow showed significantly higher healing rates in shorter delays. No fracture recurred in any of the cysts cured with DBM and bone marrow injection. No secondary epiphysiodesis were observed with this percutaneous treatment.

12.14 New semi-automatic detection method of joint penetration during triple-screw internal fixation for femoral neck fractures

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Objective: To study the feasibility of a new semi-automatic detection method of joint penetration during triple-screw internal fixation of femoral neck fractures.

Materials and Methods: The method uses intraoperative antero-posterior and lateral 2D radiographs and enables the 3D computation of the tip-to-surface distance (TSD) defined as the distance in mm between the tip of an inserted screw and the articular surface of the femoral joint.
Three cases of triple-screw internal fixation of femoral neck fractures were simulated using synthetic bone models. The three TSDs corresponding to each simulated case were computed mechanically using a coordinate measuring machine to serve as reference measurements.
For each case, two operators were asked to perform the manual identification of the three screw tips on antero-posterior and lateral 2D radiographs. TSDs were computed from the manual identifications of the screw tips and the average value (semi-automatic measurements) was compared to the corresponding theoretical